Missouri Department of Conservation
Saint Louis Region Conservation Area
Land Management Activities Calendar

B.K. Leach Conservation Area:

JANUARY - MARCH
Bush Honeysuckle Control
Prescribed burning

APRIL - JUNE
Water Level Management
Wetland Development

JULY – AUGUST
Soil disturbance
Wetland Development

SEPTEMBER
Water Level Management
Prescribed burning
Wetland Development

OCTOBER - DECEMBER
Water Level Management
Prescribed burning
Wetland development
Bottomland Forest Restoration

Columbia Bottom Conservation Area:

JANUARY
Bush Honeysuckle Control
Prescribed Burning
Water Level Management
Brush Pile Construction
Managed Deer Hunts

FEBRUARY
Bush Honeysuckle Control
Prescribed Burning
Water Level Management
Brush Pile Construction
Green Browse Management
Problem Plant Control
Prairie Establishment
Bottomland Forest Restoration

MARCH
Bush Honeysuckle Control
Prescribed Burning
Water Level Management
Brush Pile Construction
Green Browse Management
Problem Plant Control
Prairie Establishment
Farming
Planting Cool Season Grass
Bottomland Forest Restoration

APRIL
Prescribed Burning
Water Level Management
Problem Plant Control
Farming
Planting Cool Season Grass
Bottomland Forest Restoration
Mowing
Area Hours Change

MAY
Prescribed Burning
Water Level Management
Problem Plant Control
Farming
Planting Cool Season Grass
Mowing
Prairie Establishment
Wetland Soil Disturbance

JUNE
Farming
Prairie Establishment
Wetland Soil Disturbance
Mowing
Problem Plant Control

JULY
Farming
Dove Management
Wetland Soil Disturbance
Mowing
Problem Plant Control

Green Browse Management

AUGUST
Dove Management
Wetland Soil Disturbance
Green Browse Management
Mowing
Problem Plant Control
Farming
Water Level Management

SEPTEMBER
Wetland Soil Disturbance
Mowing
Problem Plant Control
Farming
Water Level Management
Cool Season Grass Planting
Dove Hunting

OCTOBER
Mowing
Farming
Water Level Management
Cool Season Grass Planting
Area Hours Change
Managed Deer Hunts

NOVEMBER
Farming
Water Level Management
Managed Deer Hunts

DECEMBER
Water Level Management
Bush Honeysuckle Control
Managed Deer Hunts

August A. Busch Memorial Conservation Area:

JANUARY
Bush Honeysuckle Control
Old Field Renovation
Edge Feathering
Brush Pile Construction
Prescribed Burns

FEBRUARY
Bush Honeysuckle Control
Old Field Renovation
Edge Feathering
Brush Pile Construction
Soil Disturbance

MARCH
Bush Honeysuckle Control
Soil Disturbance

APRIL
Prescribed Burns
Farming
Mowing
Bush Honeysuckle Control

MAY
Mowing
Problem Plant Control
Farming

JUNE
Mowing
Soil Disturbance
Problem Plant Control
Farming

JULY
Mowing
Green Browse Management
Prescribed Burns
Old Field Renovation
Brush Pile Construction
Problem Plant Control
Dove Management

AUGUST
Prescribed Burns
Old Field Renovation
Brush Pile Construction
Mowing
Dove Management
Problem Plant Control

SEPTEMBER
Mowing
Prescribed Burns
Winter Wheat Planting
Soil Disturbance
Dove Hunting
Problem Plant Control

OCTOBER

Mowing
Old Field Renovation
Brush Pile Construction
Farming
Soil Disturbance
Bush Honeysuckle Control

NOVEMBER
Bush Honeysuckle Control
Old Field Renovation
Brush Pile Construction
Edge Feathering
Farming
Soil Disturbance

DECEMBER
Bush Honeysuckle Control
Old Field Renovation
Edge Feathering
Brush Pile Construction
Prescribed Burns

Missouri Department of Conservation Saint Louis Region Conservation Area Land Management Summary

Bush Honeysuckle Control

Bush honeysuckle is an exotic shrub that has spread to woodlands, prairies, and wetland habitats. The plants were used in ornamental landscaping near urban areas and have escaped into other habitats. The spread of bush honeysuckle is generally accomplished by birds and mammals that consume the fruit of the plant. It is suspected that bush honeysuckles may produce allelopathic chemicals that enter the soil and inhibit the growth of other plants, preventing native plants from competing with the shrub. Shading by bush honeysuckle may also limit the growth of native plants. Bush honeysuckles leaf out before many native species and hold their foliage until November. Habitats that have been invaded with bush honeysuckle tend to lack sufficient ground cover to protect wildlife species from predators and have low plant species diversity. In addition, some studies have shown that bird nest success is lower when birds nest in bush honeysuckle rather than native shrubs. Control of bush honeysuckle is done with several techniques including; prescribed burning, hand pulling of stems, cutting, and herbicide treatments. One of the most effective treatments in thick stands of bush honeysuckle is cutting and treating the cut stump of the shrub with a herbicide (typically glyphosate [Roundup]) to prevent re-sprouting. Brushcutters, chainsaws, and hand pruners are the tools of choice when cutting bush honeysuckle. Prescribed burning is effective in controlling young stands of bush honeysuckle or as a follow up treatment in mature stands that have been cut.

Old Field Renovation

Old fields are abandoned pastures or crop fields that are in the early stages of plant succession, the natural process by which an area passes from bare ground to the most complex or "climax" stage of vegetation. The earlier stages are more productive for wildlife because more seed producing plants are present. When these fields are left undisturbed they become dominated with woody trees and shrubs. Over time, the fields become less and less diverse. Disking, burning, and cutting are commonly used management tools to disturb or 'renovate' the old fields. This disturbance sets back plant succession to a more diverse stage and benefits wildlife species. Old field renovation may involve cutting many of the larger woody trees and shrubs, mowing smaller woody species, disking, and conducting prescribed burns.

Edge Feathering
Edge feathering is conducted along 'hard' field edges, or areas where a crop field meets a mature timber stand. Many wildlife species live in edge habitats or travel along edges, and edge feathering increases the size of those edges. Common edge species are indigo bunting, bobwhite quail, and rabbit. Edge feathering is done by cutting some of the mature trees along the edge of the two areas and allowing the cut tree stumps and other woody shrubs to grow in their place. The end result is a strip of habitat along the edge that is similar to an old field. These edges provide valuable habitat resources for wildlife.

Brush Pile Construction
Brush piles provide valuable cover habitat for a variety of wildlife. Many bird and mammal species use brush piles at different times during the year. During old field renovation projects many of the trees that are cut are used to construct brush pile habitat for wildlife. Brush piles decay over time and material can be added to existing brush piles or new piles can be built.

Prescribed Burning
Prescribed burning or controlled burning can be used to produce desirable management effects in a variety of habitats including prairie/grassland, old field, and forest. Fire is much cheaper than other management tools such as herbicides and mowing. Most often, fire is used in late winter and early spring to achieve the desired results, however, it can be used at almost any time of the year for different purposes.

Fire has many beneficial effects, including stimulating more plants to flower and produce seed, increasing the growing season for warm-season plants (prairie species), adding nutrients to the soil, and controlling undesirable plant species. By burning off the plant litter, the dark soil is exposed to direct sunlight which results in faster soil warming. Plants grow best in warm soil, so the sooner the soil is warmed up, the faster plants can start growing each spring. The ash produced by the fire contains valuable nutrients that will be put back into the soil and used for the next growing season. Fires can be timed to control some undesirable plant species.

Soil Disturbance
Soil disturbance is usually accomplished with a tractor and disk. This disturbance results in seeds in the seedbank germinating. Usually, only portions of fields are disked so that some cover is still left in the field for wildlife. Spring disking will encourage annual grasses such as foxtail. It poses a lower risk of erosion than fall disking because the bare ground doesn't stay exposed all winter. Disking activities cease during the nesting season, which begins around mid-April. Summer disking produces more of the plants that attract insects, plus a number of major seed plants, such as beggar ticks, that are

important for many species of wildlife. By disking some areas in fall you can create more diversity and improve habitat. Fall disking tends to promote hard-seeded weeds such as ragweed and partridge pea, which are very important quail food plants. Disking at this time of year will help reduce residual problems with weeds such as johnsongrass that are less beneficial to wildlife. In addition, the fall disking will create habitat that is open at the ground level with a good overhead canopy of vegetation. This habitat is valuable for wildlife species that nest or raise their young on the ground. The openings allow wildlife to move freely through the habitat and the overhead canopy protects them from predators.

Farming

The Department of Conservation utilizes agricultural practices to control exotic plant species, provide early successional habitats, provide wildlife food resources, and generate income. Several of the open fields in the Conservation Area are enrolled in an agricultural crop rotation program. These fields are planted to a variety of crops for a 3-year period and then are left alone or idle for an additional 1-2 years. During the idle phase, a variety of annual seed producing plants grow in the fields and provide food and cover resources for wildlife. In addition, the Department of Conservation plants several small food plots on the Conservation Area that are left for wildlife benefits. The agricultural crops that were planted on the area in the spring of the year are harvested by the permittee farmer. A portion of the crops are left standing in the fields for wildlife benefits.

Agriculture is an activity that has shaped the backbone of society for many generations. It is still an important activity in many places of the world today. Most people don't generally see or understand how these activities take place; they just know that it shows up on the shelf at the local grocery store. There is almost always some sort of agriculture activity going on no matter the time of year. The average agriculture calendar may look something like this:

January-March: Legume plantings and spreading of fertilizer
April: Seed bed preparation and planting of spring crops such as corn
May: Seedbed preparation and planting of spring crops such as corn, soybeans and milo
June: Finish spring planting and start wheat harvest
July: Finish wheat harvest and weed control in spring planted crops
August-September: Weed control in spring planted crops
October-November: Harvest of spring planted crops and planting of winter wheat
December: Finish harvest of spring planted crops

Most areas are farmed by individual farmers who are under competitive bid contract with the Department of Conservation. These farmers are responsible for planting and harvesting most of the crops on the area. In some cases a portion of the crop is left in the field for wildlife use at locations specified by area personnel. Area personnel also plant additional food plots at key locations for wildlife use.

On Columbia Bottom CA agriculture is used to maintain a large open aspect to the area which makes it more appealing to waterfowl and shorebird usage. The flat, sandy soils grow corn and soybeans on an alternating schedule with some winter wheat mixed in.

On Busch CA, the area is broken up into numerous small parcels of open ground and these fields are highly erodable and to compensate for this, they are farmed on a 3 year crop rotation with a 1 to 2 year idle period mixed in.

On BK Leach CA, there are numerous small open fields but these are flat and floodable so they are generally planted with corn and soybeans on a 2 year rotational basis.

Problem Plant Control

A number of exotic plant species exist on this area including; Serecia lespedeza, musk thistle, garlic mustard, and Reed canary grass that are problem plants. These plants can gradually take over an area and out-compete native plant species so these exotic plants are controlled by fire, mowing, chemical treatment or hand removal.

Johnson grass is an invasive warm season grass that can take over a field in a short period of time. It spreads easily by both seed, which travels well in water, and by roots which form rhizomes that can spread and produce new plants just a short distance away from the original plant. It is well adapted to compete with crop plants and other grasses. To keep Johnson grass from taking over the crop fields and other areas, it is chemically treated to kill the plant. With the plant killed, other plant species can thrive.

Mowing

Mowing is a tool that can be used for a variety of purposes. Roadsides and parking lots are kept mowed to facilitate wildlife viewing opportunities, to increase safety for vehicle traffic and to aid in the upkeep of area roads. Mowing is also used in a variety of habitat situations. It is used to control invasive plant species, provide early successional habitats, and provide wildlife food resources. It is used to remove undesired plant species from an area and promote desired plants. Several open fields are planted to green browse type plants such as red clover and lespedeza and these need to be mowed once a year for plant management and to promote growth and provide a place for insects to congregate which provide another food source for wildlife. Mowing is also used in the dove management program to spread the sunflower, wheat, and other seed producing plants to place seed on the ground making it available for the birds to use.

There are 32 fishing lakes on the Busch Conservation Area. To enhance public fishing access to the lakes, the lake edges on most lakes are kept mowed throughout the growing season to a height of 6-8 inches. To maintain the integrity of the lake dams and emergency spillways, all woody vegetation is kept clear through mowing or cutting. In addition, the lake parking lot boundaries are mowed to allow public access to the lake edges and to facilitate litter cleanup

Water Level Management - Columbia Bottom

Wetland Drawdown. & Soil Disturbance:

Moist-soil management is an approach to managing wetlands that incorporates an early drawdown of wetland areas with soil disturbance to promote high quality plant foods for migratory waterfowl. Bare mudflats created by prior inundation and soil disturbance are

quickly revegetated with a variety of wetland plants, many of these are pioneering annuals that produce large seeds rich in protein and carbohydrates. Frequent soil disturbance, usually in the form of disking, is needed to maintain dominance by annual plant species. A number of factors including; timing, speed of drawdown, temperature and precipitation can effect the plant response to the drawdown.

At Columbia Bottom, the soils are sandy and water seeps into the ground fairly rapidly. Large pumps will be installed in the river to pump large volumes of water into these wetland basins to flood them up in the fall and to maintain water levels once the pools are filled. (link to Columbia Bottom Wetland Development)

Fall flooding will sometimes begin as early as mid July in an effort to provide shallow water and mudflats for migrating shorebirds. Gradual flooding of various pools will continue throughout the fall in an effort to constantly flood new habitats as the waterfowl migration progresses. Typically maximum depth will be reached in most pools by mid to late November. These water levels will be maintained until freeze up or through the winter if freeze up does not occur. When the spring thaw occurs, water levels that may have receded, will be brought back up and maintained until spring drawdown.

Spring Drawdown usually begins in March and will continue in various pools through April or maybe into May or June depending or river levels and other factors. Pools that are scheduled to go to agriculture will be drawn down first and drawdowns on other pools will be varied to provide habitat diversity through the spring migration and to promote varied moist soil plant responses.

In the summer months some of these wetland pools will be manipulated by mowing or disking to stimulate desirable annual plants and control problem plant. Corn or soybeans may occasionally be planted in some of the wetland pools by one of the area farmers. This is done in an effort to provide high energy foods for waterfowl and to utilize the farming activity as a soil disturbance to promote annual wetland vegetation in following years.

Columbia Bottom Wetland Development

By most estimates, over 90% of Missouri's natural wetlands have been destroyed or altered. This is one of the primary reasons that the Department of Conservation places a high priority on restoring and enhancing wetland habitats on our public lands when we have the opportunity.

A wetland development project designed to enhance and restore wetland habitats on Columbia Bottom Conservation Area is in progress. This project involves the construction of approximately six miles of low profile levees, almost four miles of underground pipeline, 11 water control structures and a river pump station. Construction of the levees, water control structures and pipeline was completed in 2003 and plans are to begin construction of the pump station in 2004. It will likely take about a year to complete construction of the pump station and we anticipate that the wetland development project will be completed in 2005.

This development project will create seven managed wetland pools that will total approximately 800 acres when at maximum pool. It will also create 3 opportunistic pools that will add about 150 acres of wetland in wet years. These opportunistic pools have

levees and water control structures but will not have water supplied from the pump station.

Some wetland management will be possible in 2004 now that the wetland levees and control structures are in place but full scale wetland management on Columbia Bottom will not happen until the pump station is complete in 2005.

This wetland development project is being done in partnership with the U.S. Army Corps of Engineers through a program known as the Missouri River Mitigation Program. This program is an effort to restore flood plain and in stream habitats to mitigate for habitats that were lost due to the channelization of the Missouri River. The Mitigation Program is not only funding the design and construction of the wetlands and Columbia Bottom but also the reforestation and prairie establishment efforts on the area.

Columbia Bottom Area Hours

In an effort to encourage primarily day time use of Columbia Bottom Conservation Area and to discourage undesirable night time activity, the closed hours are adjusted seasonally. The area is closed to public use from 10:00 p.m. to 7:00 a.m. from April 1 through September 30. These closed hours change to 7:00 p.m. to 7:00 a.m. from October 1 through March 31. Exceptions are made for those participating in authorized hunting and fishing activities, launching or landing boats at the river access and for Department sponsored programs or events such as night hikes for owl watching.

Prairie Establishment

The Columbia Bottom Conservation Area Management Plan includes a goal to create a mosaic of bottomland habitats comprised of wetland, forest, cropland and prairie. Prairie is the one component of this mosaic that was not present on the area when it was purchased in 1997. Our plan is to establish at least 300 acres of bottomland prairie in large blocks that will mostly be adjacent to several of the wetland pools. In the spring of 2004 a fifty acre block of former cropland will be planted with native prairie grasses and forbs. Similar plantings will be completed each year until the 300 acre goal is reached.

Some of the forbs will be seeded in soy bean stubble during the winter and early spring. The remainder of the forbs and the grasses will be planted with a grass drill in the spring. It frequently takes two to three years for these native prairie plants to become well established and these fields may look like weed patches for the first year or two.

Bottomland Forest Restoration at Columbia Bottom

Historic survey notes from Columbia Bottom indicate that portions of the area once supported stands of bottomland hardwood forest. Dramatic changes in the hydrology of the bottom, clearing for agriculture and other factors eliminated hard mast producing trees from Columbia Bottom. We plan to restore bottomland hardwoods such as pin oak, pecan, swamp white oak and bur oak to portions of the area. The sites that have been chosen for this reforestation effort are at some of the highest elevations in the bottom.

A cover crop of a redtop will be planted on these sites to reduce competition from annual weeds and invasive woody species such as cottonwood, willow and maple. Seedlings will be planted using a fairly tight spacing in an effort to ensure that a good number of trees will survive the deer damage that is expected.

Approximately 35 acres will be planted early in 2004 and similar size plantings will be completed during the next few years. This reforestation effort is a long term project and it will be many years before the full benefit of the effort is realized.

Managed Deer Hunts

Whitetail deer are a very popular animal to watch in the wild. It is not often that a person can go out and see several deer at one time and at a relatively close distance. Seeing a lot of deer is often exciting but high deer populations can be detrimental to the deer's surroundings. When a deer population gets to a point where it's food resources and available habitat are limited, either the deer have to move out or some major catastrophe can occur. To keep the deer population from getting too high, managed deer hunts are held to allow harvest of certain numbers and genders of deer. During these hunts, only registered hunters are allowed to hunt deer using the prescribed method that is designated for the hunt. These methods may be archery (bow and arrow), primitive weapons (muzzle loader), or even modern firearms. The goal of these hunts is to maintain a good population of deer for public viewing and also allow for the opportunity to harvest a deer and assist in the control of the population.

Cool Season Grass Planting

Cool season grasses are grasses that grow well in the early spring and again in the late fall and not much during the heat of the summer. These grasses are planted in the early spring or late fall to provide additional habitat for wildlife. They are used for nesting habitats and roosting areas by birds and other small mammals.

Dove Management

Several activities take place during the year to help provide food and habitat for doves and other seed eating birds. In April and May, sunflowers are planted by permittee farmers and area personnel. These are allowed to mature and beginning in late July and through the month of August, the sunflowers are mowed down to put the seed on the ground where the doves, goldfinches, cardinals and other birds can easily get at the seeds. Winter wheat that has been planted the previous fall is mowed down in a similar fashion to provide abundant seed for the birds that use these areas. In most years, portions of these fields are left standing to provide a winter long supply of seed for the birds.

Dove Hunting

Dove hunting is the most popular type of game bird hunting in Missouri. Doves nest in Missouri as well as migrate through Missouri. Doves are traditionally hunted in the early fall. This is a very popular activity on many state areas and as such is managed in different ways on different areas. On the Busch CA the area is open to all hunters with a morning only hunt. On Columbia Bottom CA, the area has a managed hunt program in

which hunters have to register during the month of July to put in for the drawing to select hunters for the first 10 days of the regular season. A selected number of hunters are drawn for each day and these people can bring a partner with them and hunt on Columbia Bottom CA during an afternoon hunt on the day that they are drawn for.

Green Browse Management

Several open fields on the Conservation Area are planted with red clover to provide food and cover resources for wildlife. The red clover provides a valuable green browse food source for wildlife. In addition, the clover also attracts numerous insects, which serve as a food source for many wildlife species. Several agricultural crop fields are planted to winter wheat during September. Winter wheat provides a green browse food source for wildlife in fall and winter. Green browse is a name given to legumes and wheat planted in the fall for winter food for wildlife. Primarily these are legumes such as red clover, alfalfa, or lespedeza that provide green vegetation for wildlife to eat when most other food sources are not available. They also provide cover resources for wildlife such as rabbits and quail. They also attract numerous insects which serve as a food sources for other wildlife species. These areas are generally planted in the fall or late winter and may require other management activities such as mowing during other times of the year.

Water Level Management (B.K. Leach)

Moist-soil management is an approach to managing wetlands that incorporates an early drawdown of wetland areas with soil disturbance to promote high quality plant foods for migratory waterfowl. Bare mudflats created by prior inundation and soil disturbance are quickly revegetated with a variety of wetland plants, many of these are pioneering annuals that produce large seeds rich in protein and carbohydrates. Frequent soil disturbance, usually in the form of disking, is needed to maintain a dominance by annual plant species.

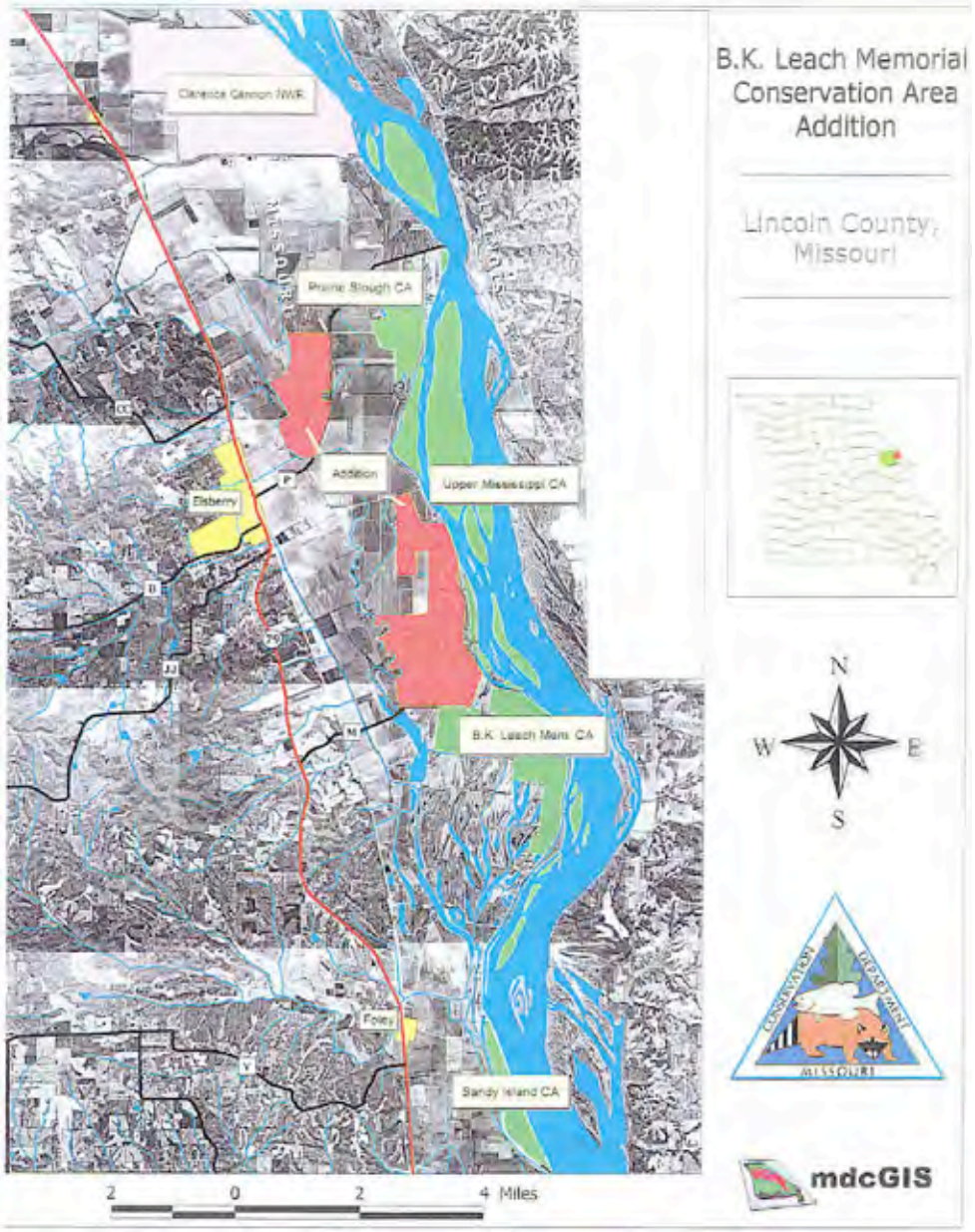
Lesser yellowlegs utilize the transition zone between shallow water and mudflats to forage for invertebrates.

Wetland Development

2,789 acres were recently added to BK Leach CA through a partnership between the Natural Resources Conservation Service, Missouri Department of Conservation, Ducks Unlimited, American Land Conservancy, Mary E. Leach Trust, National Waterfowl Association, and Forest Keeling Nursery. The area was acquired through a North American Wetlands Conservation Act (NAWCA) grant to restore a variety of wetland habitats. Of the total acreage, 2,680 acres are permanently enrolled in a conservation easement through the Wetlands Reserve Program. The WRP easement restricts some aspects of site development, such as roads and buildings, but the acquisition would not have been possible without the easement.

The three main habitats to be restored include emergent marsh, wet prairie, and bottomland forest. Examples of priority bird species to benefit from the restoration include least bittern, Northern pintail, mallard, king rail, black rail, greater yellowlegs, solitary sandpiper, and American bittern. Most of the area is comprised of fallow agricultural fields, however there are two emergent marsh remnants on the property and a healthy diversity of wetland plant species have already emerged from the area's soil seed bank.

Levee and water control structure development on the north tract (938 acres) are complete. Wells are planned to be installed in 2004 and the area will be open for waterfowl hunting in the fall of 2004. Development of the south tract (1,851 acres) started in September of 2003 and will continue through August of 2004. Currently both tracts are closed for construction.


B.K. Leach Memorial Conservation Area Addition
Lincoln County, Missouri
Clarence Cannon NWR
Prairie Slough CA
Addition
Upper Mississippi CA
Elsberry
B.K. Leach Mem. CA
Foley
Sandy Island CA
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Fall Flooding

To increase habitat availability for migrating waterfowl, roughly 325 acres of the area are seasonally flooded in the fall. Two pump stations utilizing portable water pumps push water over the main river levees into the area. The acreage flooded is severely limited by elevation gradients created by the ridge and swale topography of the area.

Aerial view of a wetland unit intensively managed for waterfowl through the shallow flooding of standing corn and moist-soil units.